

CLAIMS

1. A method of applying a digital watermark to a data file, the method comprising:  
creating a pre-calculated set of elementary watermarks and a plurality of sections of  
the data file;

5       calculating a data file watermark on receipt of a request for supply of the data file;  
      selecting pre-calculated elementary watermarks equivalent to constituent portions  
of the data file watermark by comparing the constituent portions of the data file watermark  
with the pre-calculated elementary watermarks; and  
      constructing a watermarked data file by assembling selected elementary watermarks  
10       combined with the plurality of sections of the data file.

2. A method according to Claim 1, wherein the calculating step comprises  
calculating a transaction specific watermark.

15       3. A method according to Claim 2, wherein the calculating step comprises  
retrieving user data from a user database to construct the transaction specific watermark.

4. A method according to Claim 1, wherein the elementary watermarks are binary  
representations.

20       5. A method according to Claim 1, wherein the constructing step comprises  
incorporating error correction data into the data file watermark.

25       6. A method according to Claim 1, wherein the creating step comprises:  
      creating multiple copies of each section of the plurality of sections of the data file;  
      applying to each set of multiple copies a set of elementary watermarks such that  
each copy of a section contains a different elementary watermark; and  
      storing the elementary watermark containing copies of each section.

30       7. A method according to Claim 6, wherein the constructing step comprises  
accumulating a selected plurality of elementary watermark containing copies of the  
sections.

8. A method according to Claim 1, wherein the creating step comprises: calculating and storing the set of elementary watermarks; and calculating and separately storing the plurality of sections of data.

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9. A method according to Claim 8, wherein the constructing step comprises : selecting each section of data and adding to it a pre-calculated elementary watermark selected by virtue of its correspondence with a constituent part of the data file watermark.

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10. A method according to Claim 1, further comprising selecting sections of the data file most suitable for the addition of the elementary watermarks.

11. A method of implementing real-time transaction specific watermarking to generate a transaction specific digitally watermarked data file, the method comprising:

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prior to receiving a transaction request for the data file:

dividing the data file into a plurality of sections; and

creating a set of pre-calculated elementary watermarks;

on receiving a transaction request for the supply of the data file:

calculating a transaction specific watermark;

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selecting pre-calculated elementary watermarks equivalent to constituent portions of the transaction specific watermark by comparing the constituent portions of the transaction specific watermark with the pre-calculated units of data; and

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constructing a transaction specific watermarked data file by assembling the selected pre-calculated elementary watermarks together with corresponding ones of the plurality of sections.

12. A method according to Claim 11, wherein the method further comprises:

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prior to receiving a transaction request for the data file:

creating multiple copies of each section of the plurality of sections of the data file;

applying to each set of multiple copies the set of elementary watermarks such that each copy of a section contains a different elementary watermark; and

storing the copies of the sections containing the elementary watermarks.

13. A method according to Claim 11, wherein the creating step comprises:  
calculating and storing the set of elementary watermarks; and separately storing the  
5 plurality of sections of data.

14. A method according to Claim 13, wherein the constructing step comprises:  
selecting each section of data and adding to it a pre-calculated elementary watermark  
selected by virtue of its correspondence with a constituent part of the data file watermark.

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15. A data carrier comprising a computer program arranged to configure a  
computer to implement a method of applying a digital watermark to a data file, the method  
comprising: creating a pre-calculated set of elementary watermarks and a plurality of  
sections of the data file;

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calculating a data file watermark on receipt of a request for supply of the data file;

selecting pre-calculated elementary watermarks equivalent to constituent portions of the  
data file watermark by comparing the constituent portions of the data file watermark with  
the pre-calculated elementary watermarks; and

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constructing a watermarked data file by assembling selected elementary watermarks  
combined with the plurality of sections of the data file.

16. An apparatus for applying a digital watermark to a data file, the apparatus  
comprising a processor adapted:

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to create a pre-calculated set of elementary watermarks and a plurality of sections  
of the data file;

to calculate a data file watermark on receipt of a request for supply of the data file;

to select pre-calculated elementary watermarks equivalent to constituent portions of  
the data file watermark by comparing the constituent portions of the data file watermark  
with the pre-calculated elementary watermarks; and

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to construct a watermarked data file by assembling selected elementary watermarks  
combined with the plurality of sections of the data file.